

STEP-conneCT – An Unconventional Solution to String Failure Analysis

STEP Energy Services leverages modern technology that allows operators to make better decisions in real-time. As a part of the STEP-IQ™ suite of products and services, STEP-conneCT is a downhole data acquisition tool that provides real-time data to the surface during milling operations.

Challenge:

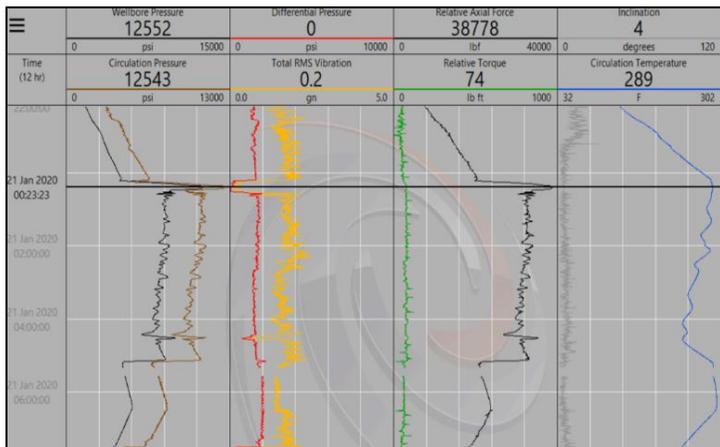
A producer, with operations in south Texas, had been experiencing several string failures in the Eagle Ford formation and as a result, they were in the process of identifying the potential cause with agitation tools. The operator believed the output forces added additional fatigue that caused string failures approximately 200 meters (650 feet) from the whip-end, but could not attribute the failures to any conventional problems. There was no damage to the outside diameter of pipe, nor at a bias weld, and no signs of corrosion.

Solution:

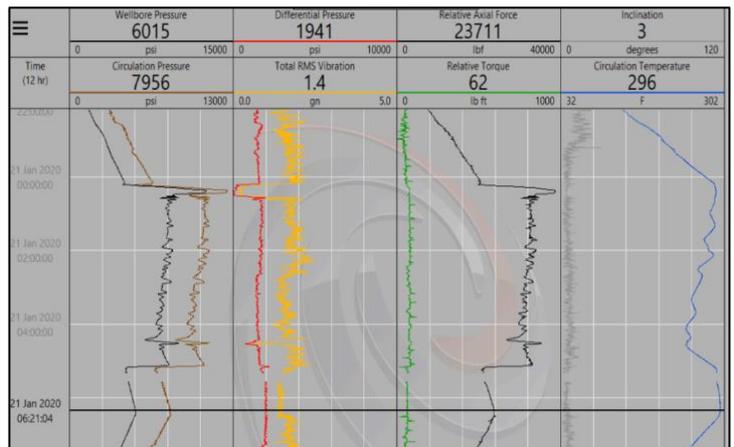
STEP proposed a solution that would see the use of the STEP-conneCT tool to assess what was happening downhole – something the tool had never been used for. The company deployed its common agitation tools in the wellbore to simulate milling parameters to record the vibration pattern using STEP-conneCT, and a memory tool (for cross-examination). The Eagle Ford typically sees downhole temperatures of approximately 160°C or 320°F, which exceeds the operating temperature of the tool (148°C or 300°F); measures were taken to limit tool exposure. An uncompleted well was selected for this test. The depth was limited to temperatures below 148°C or 300°F, and fluid circulation was also used to manage technical limits.

Results:

By using STEP-conneCT the client was able to obtain a more accurate picture of the milling operation enabled by real-time downhole data. The job was executed safely and efficiently for the client, capturing necessary data which was sent off for analysis and used in the final assessment of the string failures.



Data capture using STEP-conneCT during string failure analysis operations, showing effective measurement of vibration effects near the milling assembly.



Real-time data is transmitted to surface via e-coil and made available for remote monitoring.